

FIG. 1 (PRIOR ART)

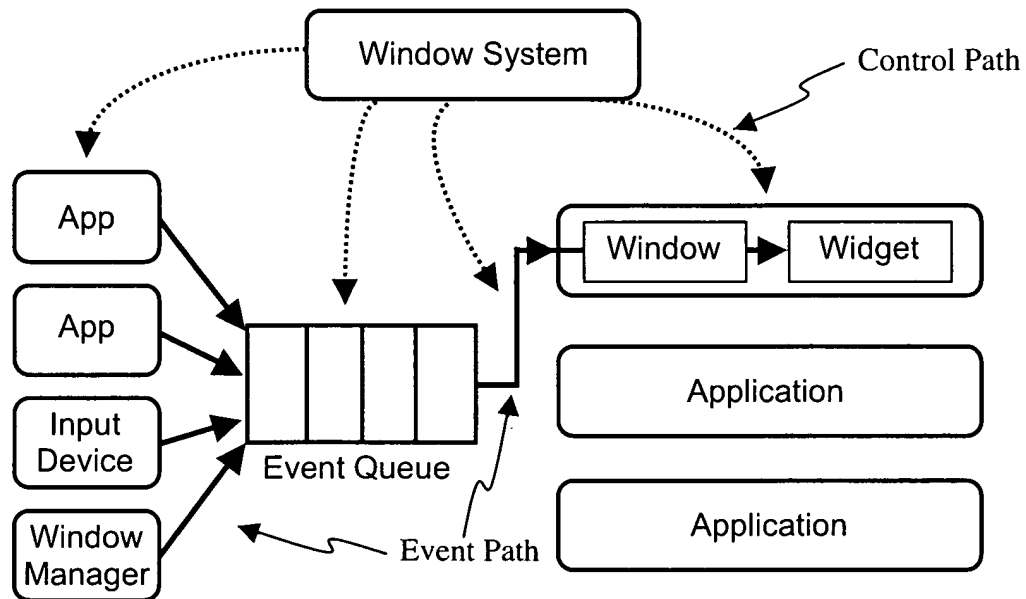


FIG. 2 (PRIOR ART)

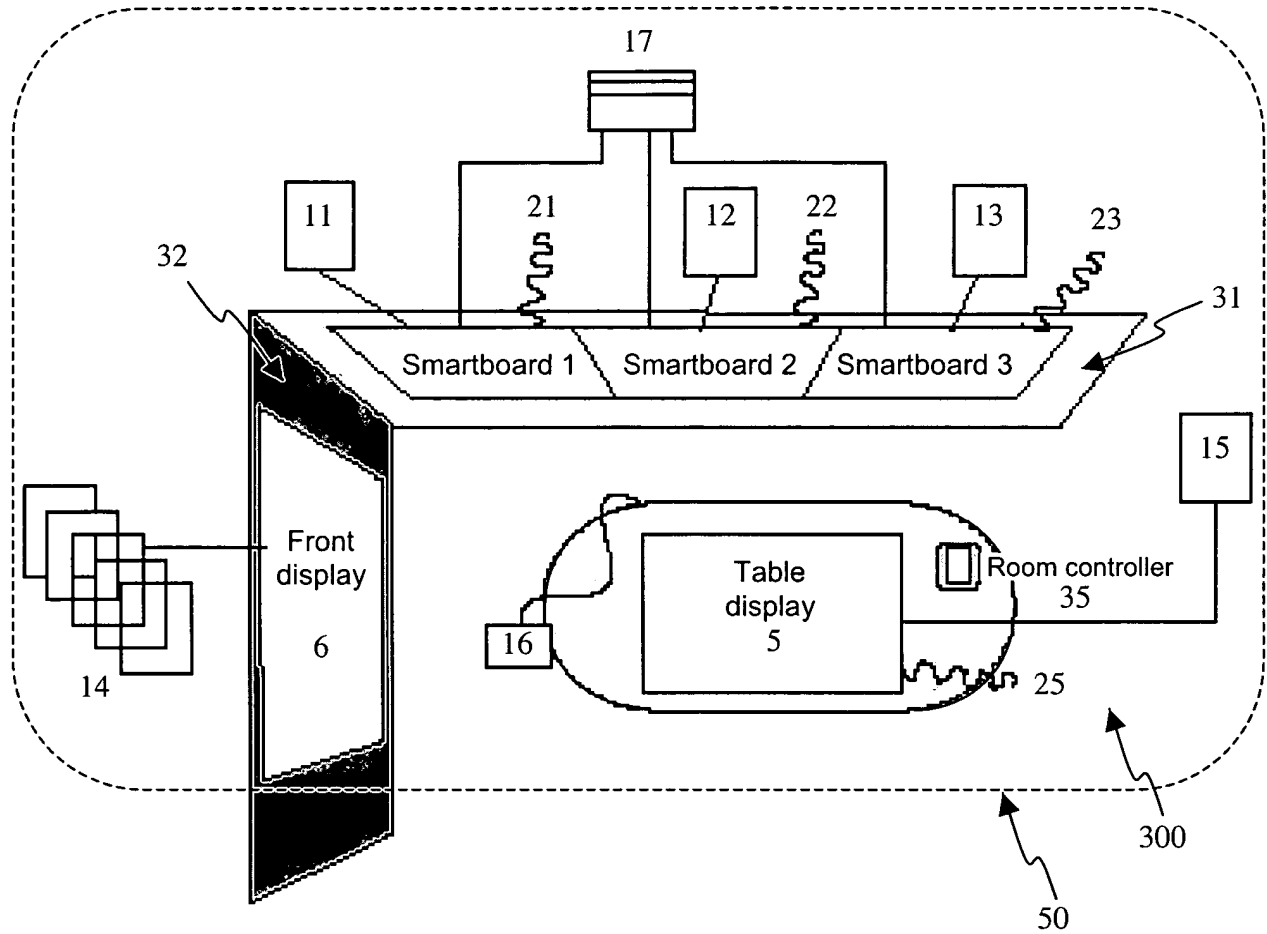
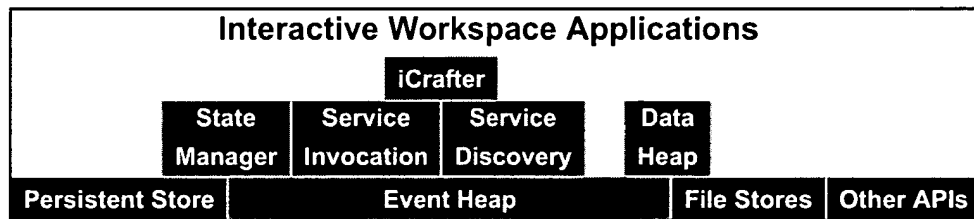


FIG. 3



400

FIG. 4

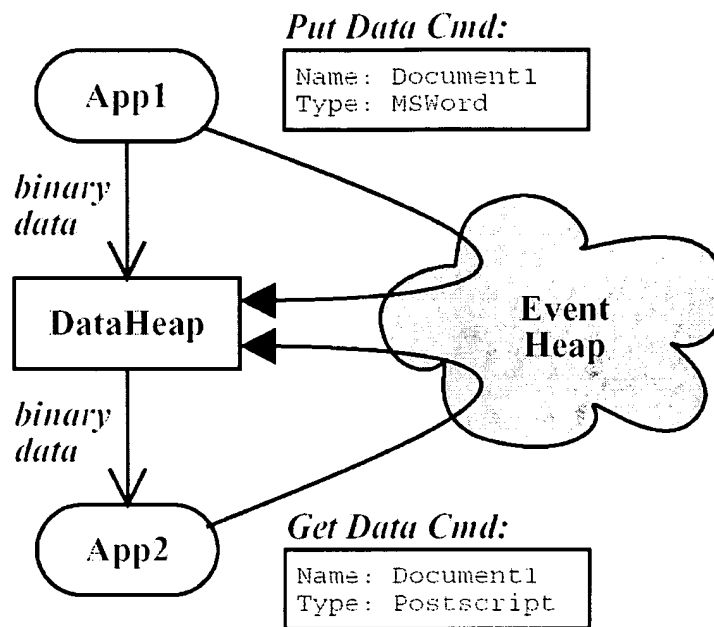


FIG. 5

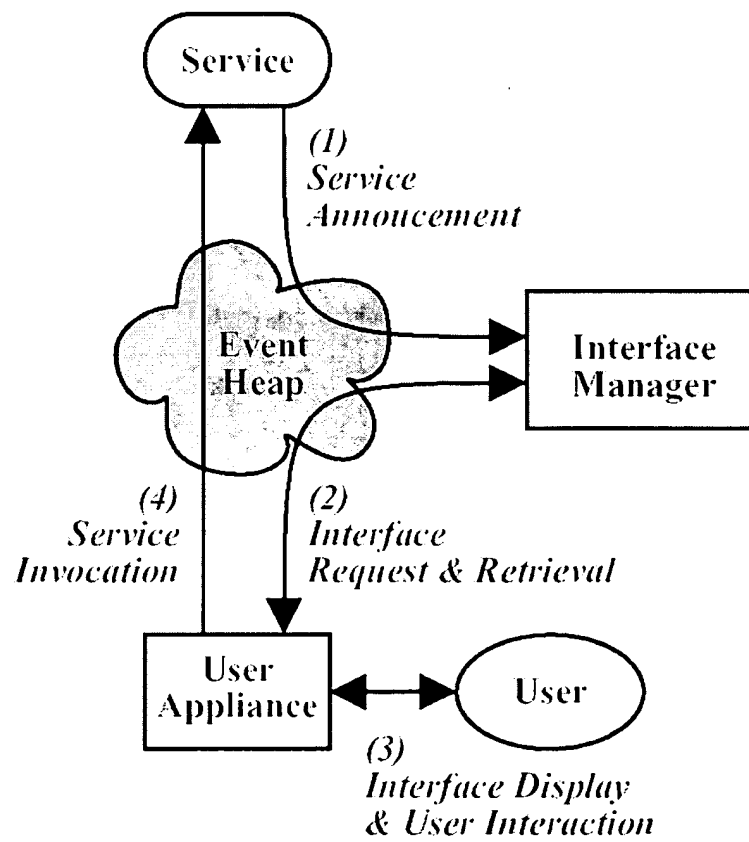


FIG. 6A

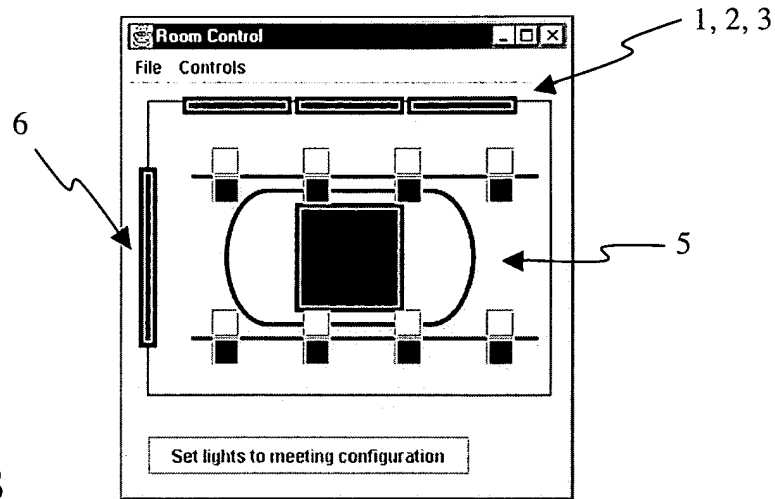


FIG. 6B

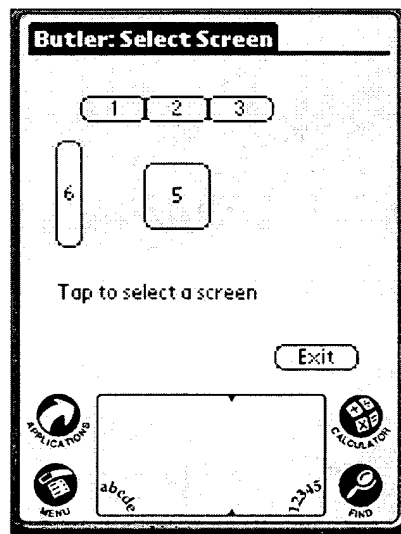


FIG. 6C

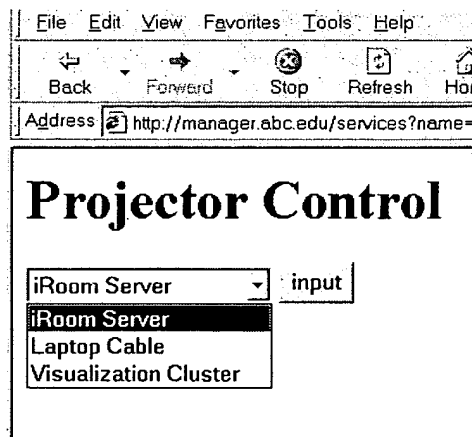


FIG. 6D

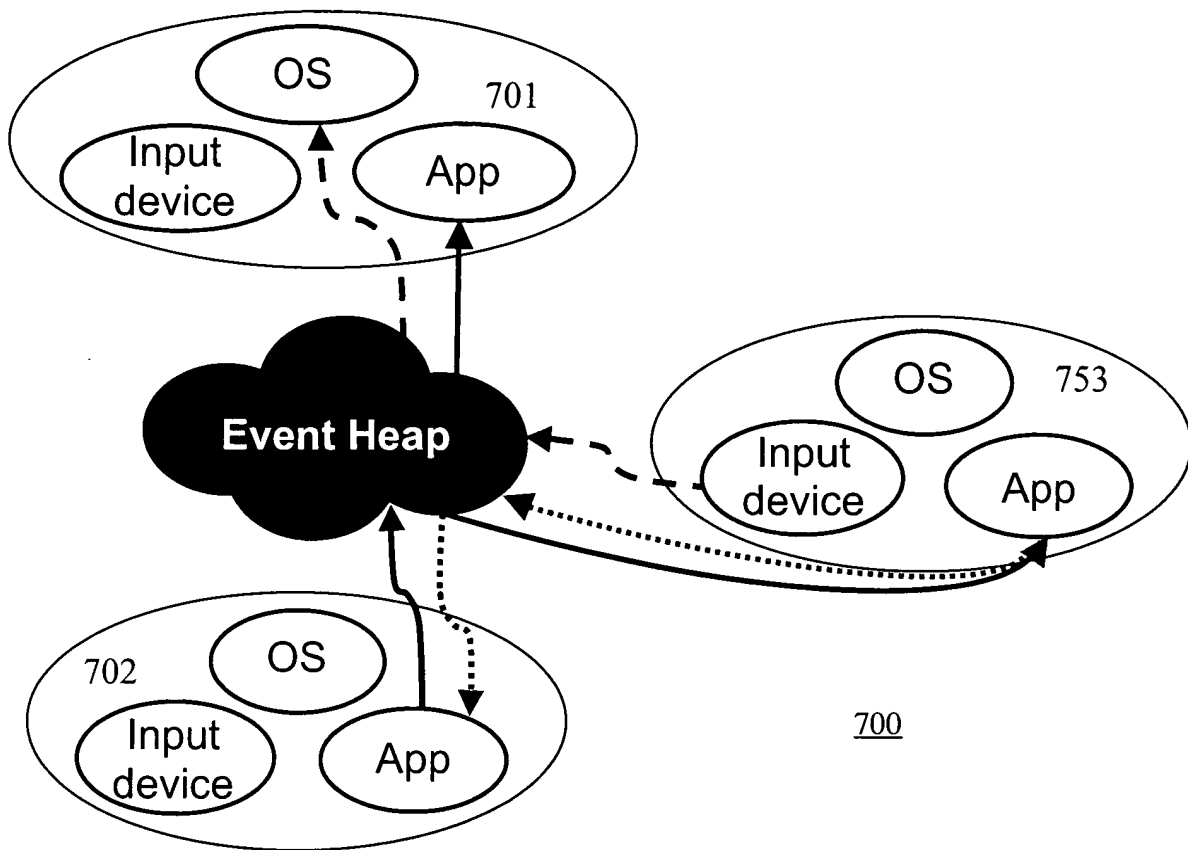


FIG. 7

SELF-DESCRIPTION ONLY

Double xPos	=	Double xPos
Double yPos		Double yPos

FLEXIBLE TYPING AND SELF-DESCRIPTION

EventType MapLoc	≠	EventType GridCoord
Double xPos		Double xPos
Double yPos		Double yPos

(a) Example of False Match Under Basic Tuplespaces that is Fixed by Typing

Double xPos	≠	Double xPos	EventType MapLoc	EventType MapLoc
Double yPos		Double yPos	Double xPos	Double xPos
		Int zoomFactor	Double yPos	Double yPos
				Int zoomFactor

(b) Example of Flexible Typing Allowing Additional Field Data to be Inserted

Double xPos	≠	Double yPos	EventType CameraPos	EventType CameraPos
Double yPos		Double zPos	Double xPos	Double yPos
Double zPos		Double xPos	Double yPos	Double zPos
			Double zPos	Double xPos

(c) Example of Field Ordering Causing Mismatch which is Fixed by Flexible Typing

FIG. 8

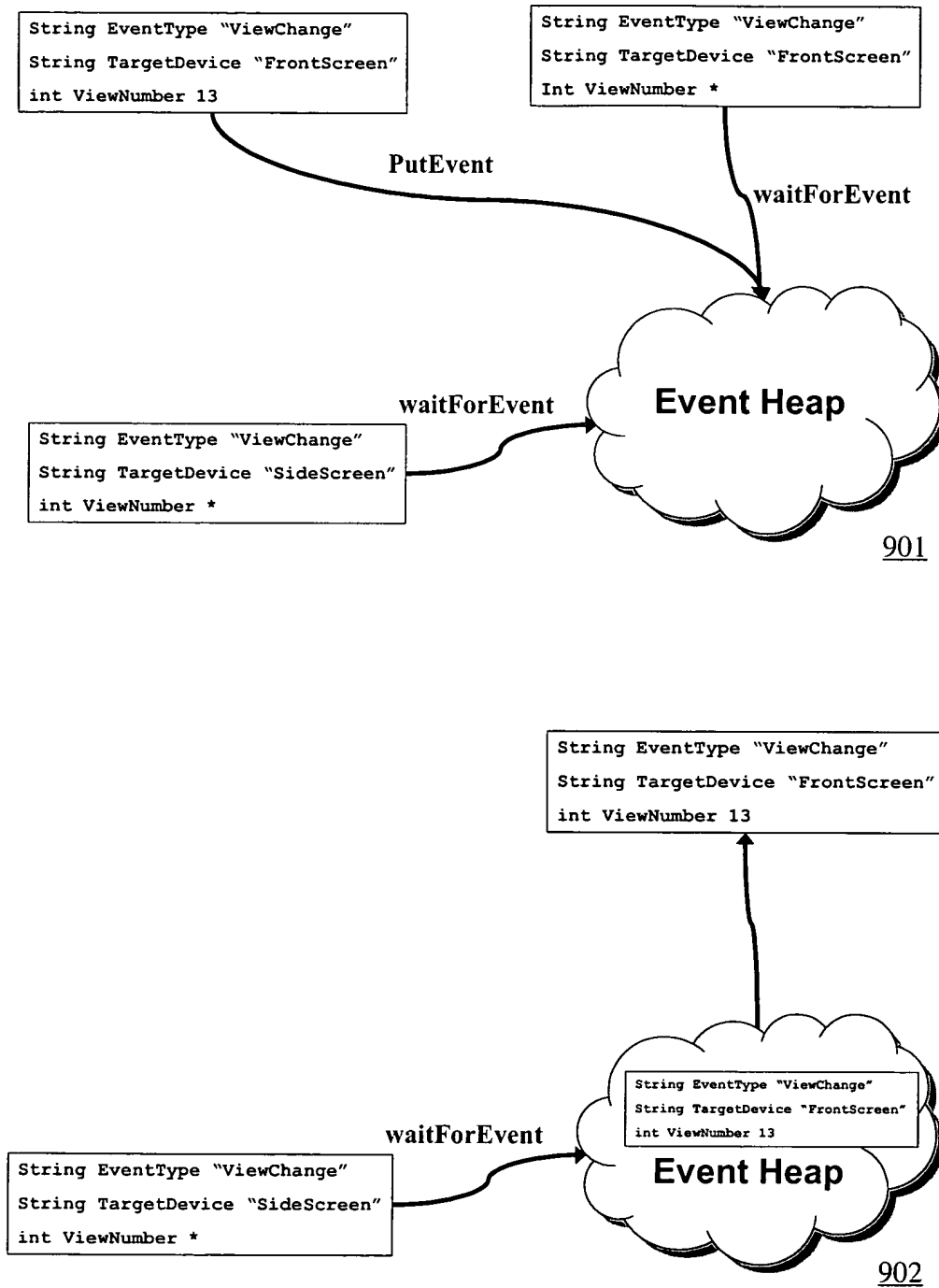


FIG. 9A

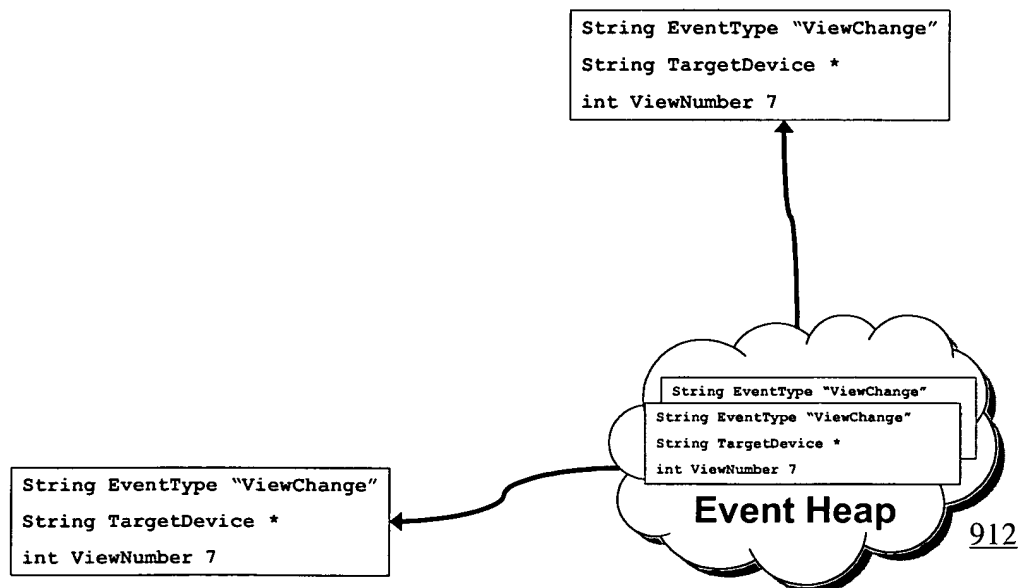
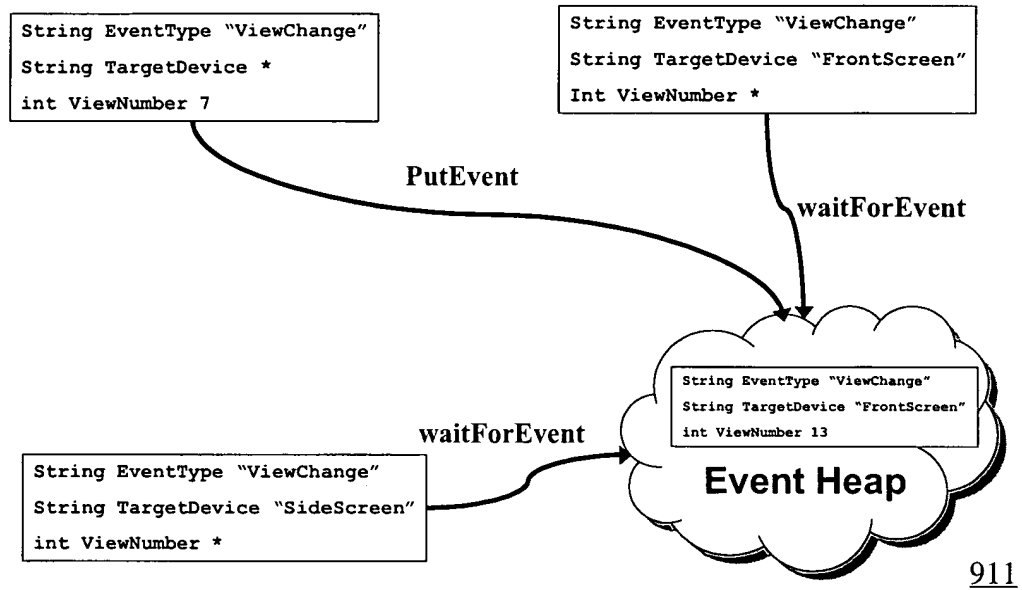


FIG. 9B

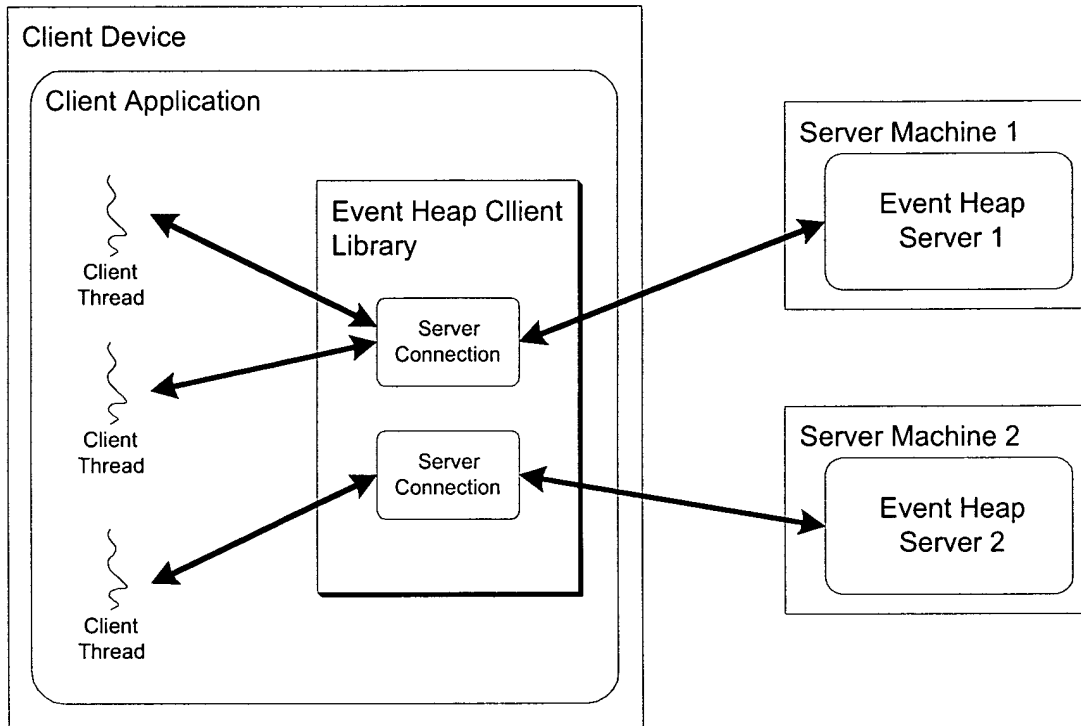


FIG. 10A

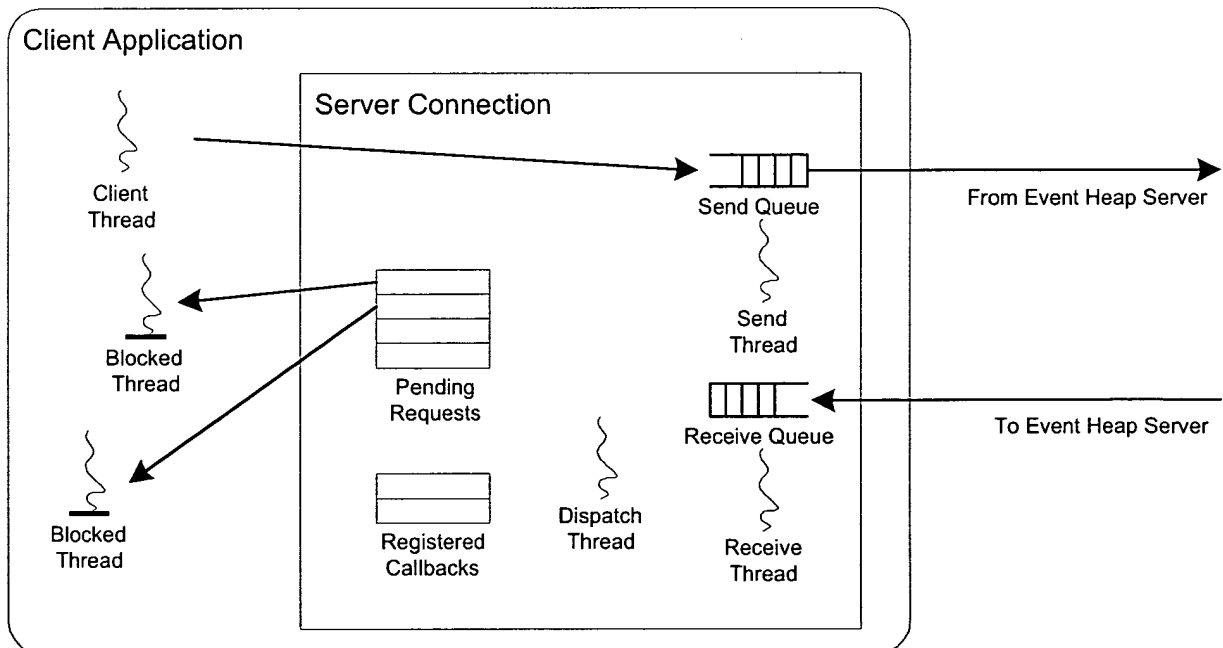


FIG. 10B

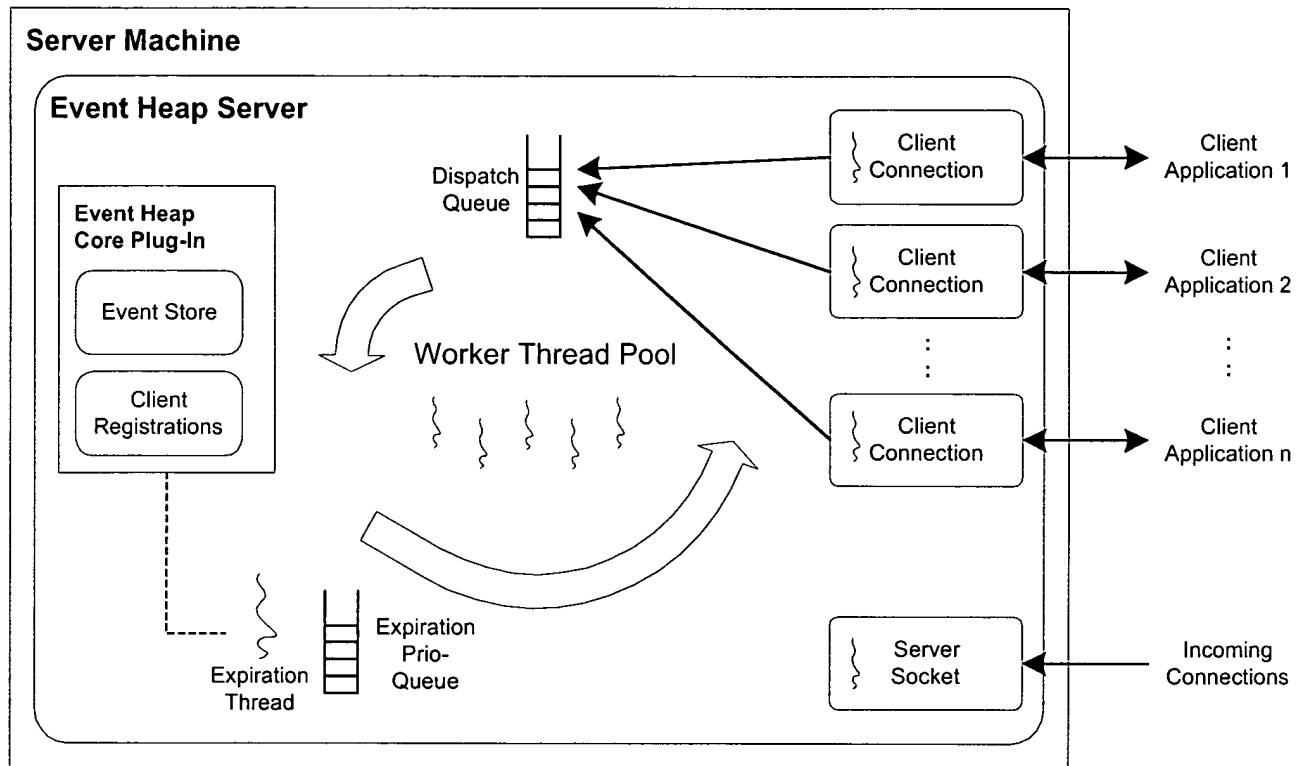


FIG. 11

11/14

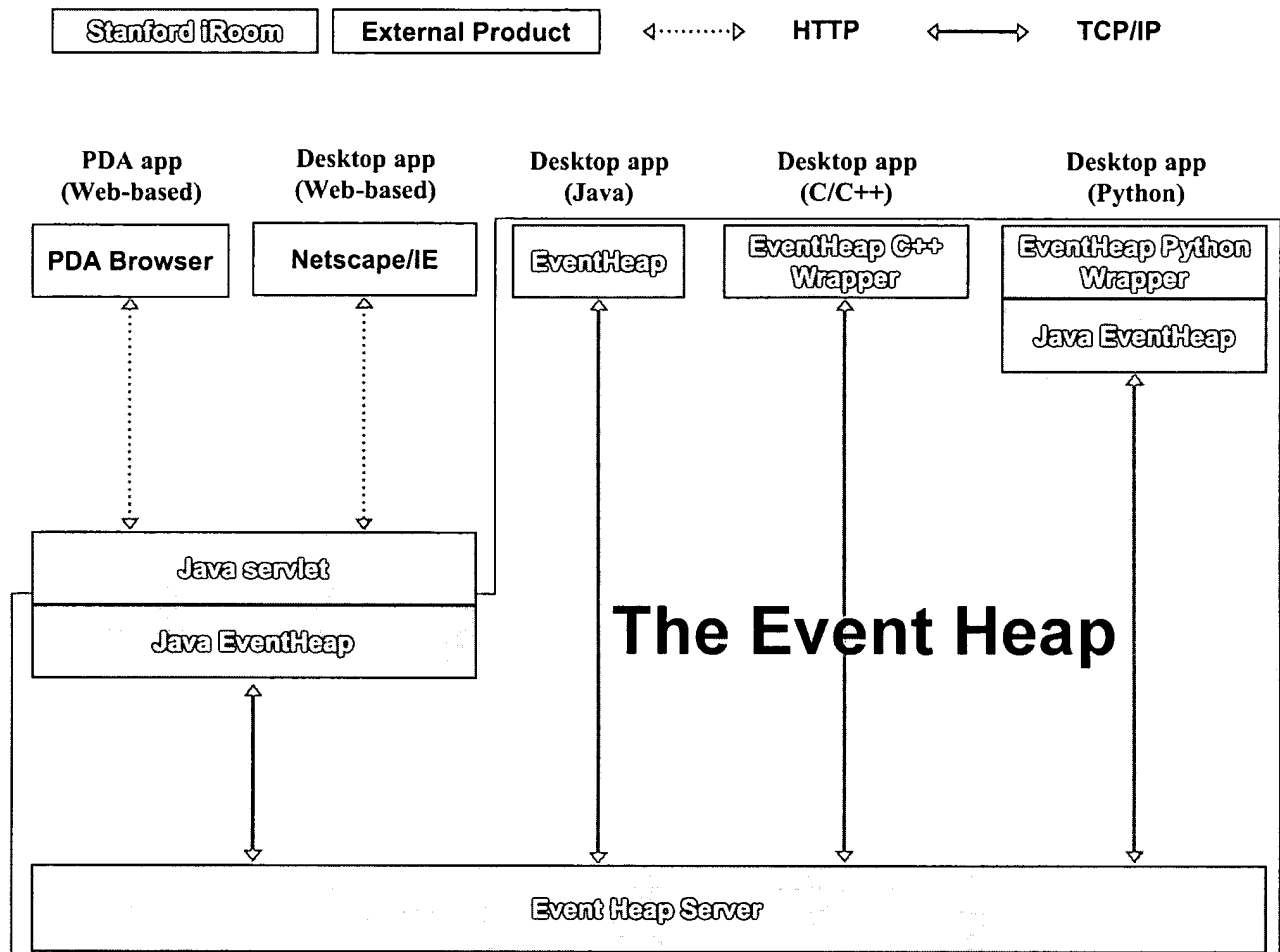


FIG. 12

12/14

Event Heap Debugger

Machine: Port: Source Name: Application Name: Device Name:

Value: Person: Group:

Event Type	Source	Name	NumAccesses	SendTime	Type
putEvent	8008_1849474018	(Name: NumAccesses			
getEvent	7007_1924388574	(Name: NumAccesses			
removeE...	6006_1537084658	(Name: NumAccesses			
waitToRe...	5005_2046391882	(Name: NumAccesses			
waitForE...	4004_1146667086	(Name: NumAccesses			
snoopEv...	3003_2130442438	(Name: NumAccesses			
deleteEv...	2002_1547458209	(Name: NumAccesses			
getAll	1001_2104118714	(Name: NumAccesses			
clear	1_1855372746	(Name: SendTime			
	1_1855372746	(Name: SendTime			
	0_1044436916	(Name: SendTime			
	0_1044436916	(Name: SendTime			
	1_1855372746	(Name: SendTime			
	0_1044436916	(Name: SendTime			
	0_1044436916	(Name: SendTime			
	1_1855372746	(Name: SendTime			
	1_1855372746	(Name: SendTime			
	0_1044436916	(Name: SendTime			

Name	Type	Post Value	Template Value
string	FORMAL		AUTOSET_OVERRIDEABLE
Application string	FORMAL		FORMAL
Application string	FORMAL		AUTOSET_OVERRIDEABLE
Device string	FORMAL		FORMAL
Device string	FORMAL		AUTOSET_OVERRIDEABLE
Person string	FORMAL		AUTOSET_OVERRIDEABLE
Group string	FORMAL		AUTOSET_OVERRIDEABLE
Time long	1002334908562		VIRTUAL
int	1		VIRTUAL
int	1		VIRTUAL

Field Name: Type:

Machine: localhost Port: -1 Source Name: Default Application Name: EventHeapDebugger Device Name: Default

Connection: Connected to localhost:4535

getAll: Event(s) retrieved from Event Heap

getAll call returned no events

getAll: Event(s) retrieved from Event Heap

FIG. 13

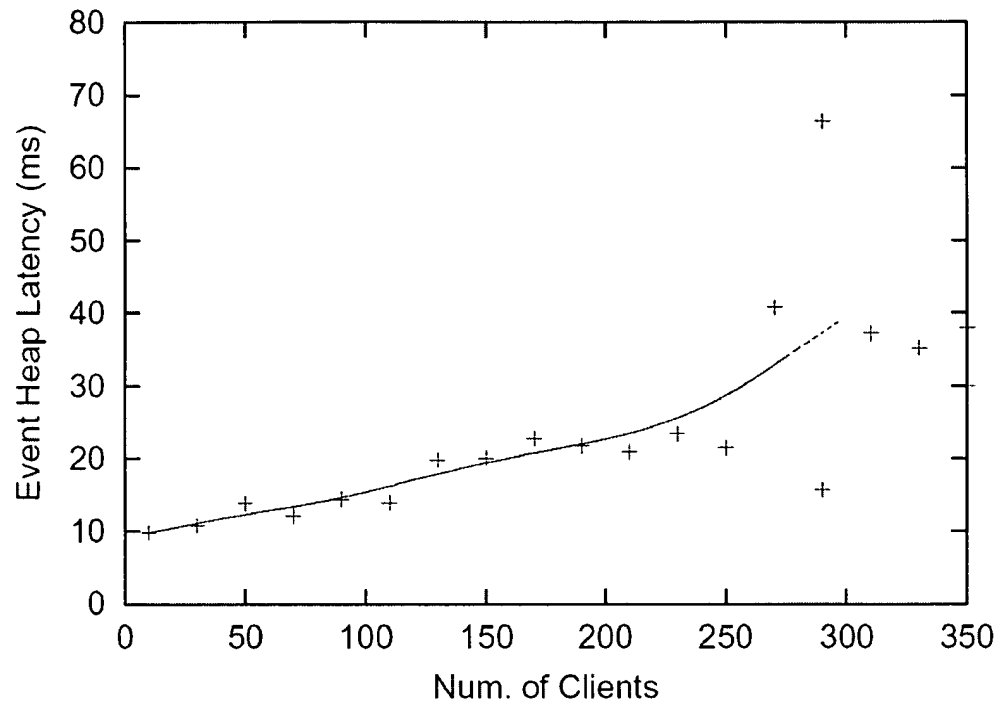


FIG. 14

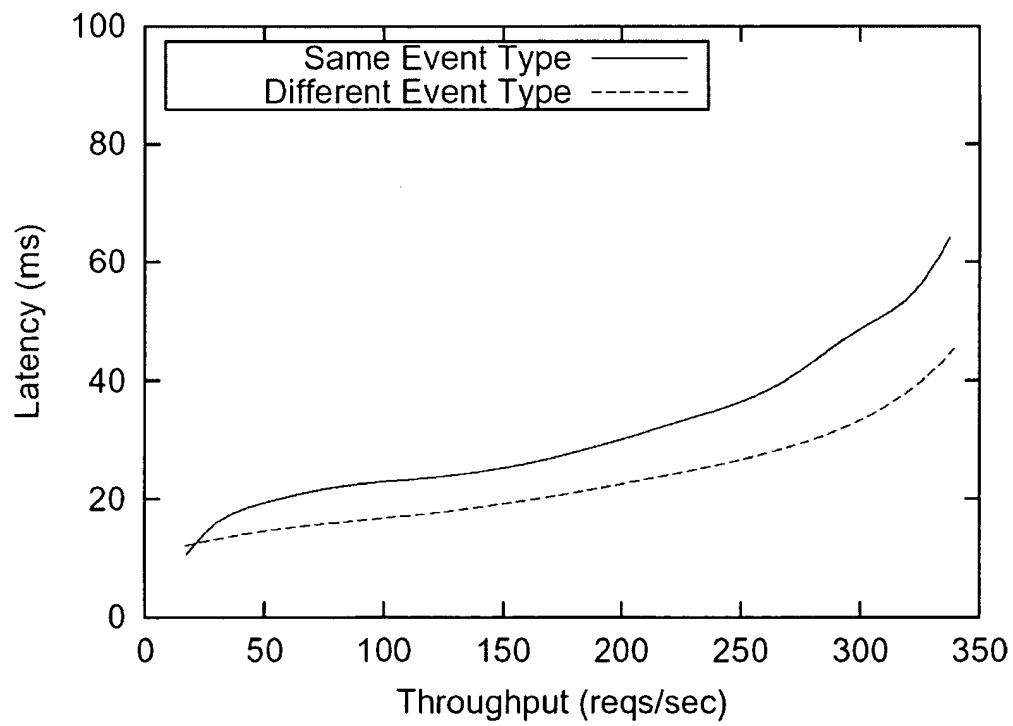


FIG. 15

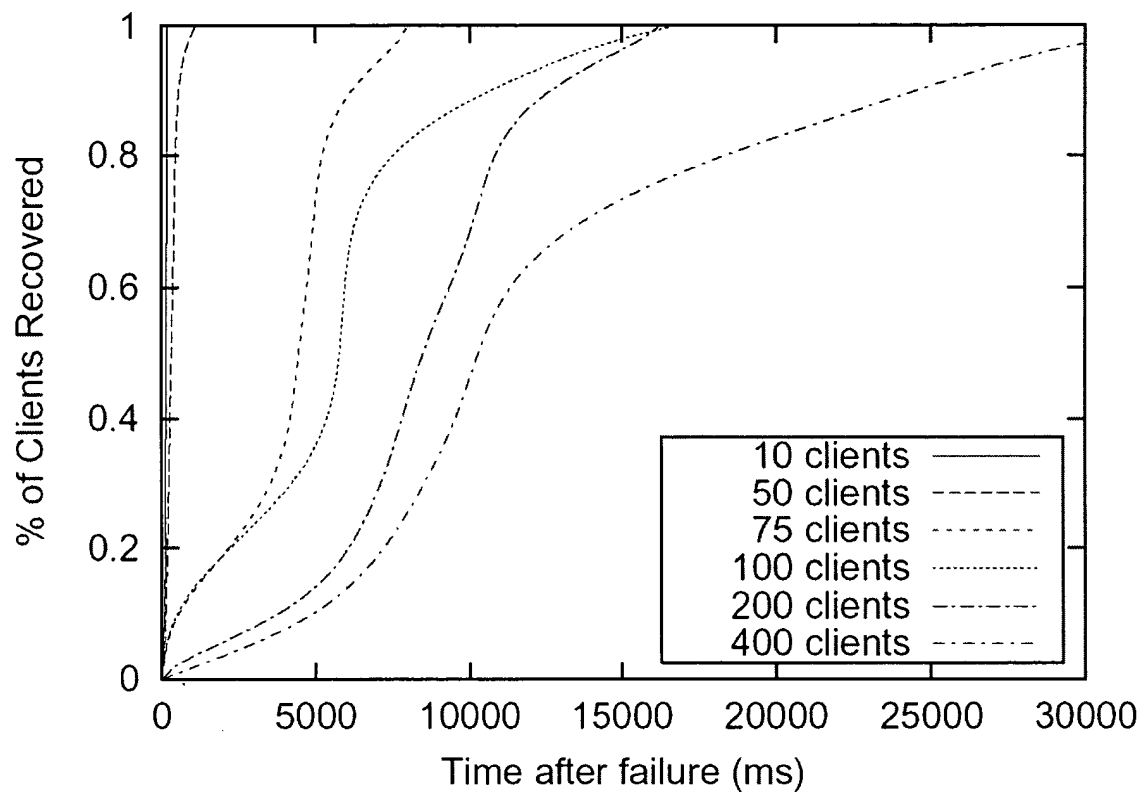


FIG. 16